How common are the new compensation and work organization practices and who adopts them?

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Abstract
The aim of this paper is twofold. First, to document the use and the diffusion of the "new" compensation and work organisation practices in Danish private sector firms and second, to examine how and why firms differ regarding the adoption of different schemes. The analysis is based on a detailed mail questionnaire answered by 1,600 Danish private sector firms.

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1. Introduction

According to some accounts, and the business press in particular, firms' compensation and hiring practices as well as their work organisations have recently undergone marked changes aimed at increasing the flexibility of cost structures, linking employees' pay more closely to firm performance and enhancing incentives for productive behaviour. This discussion has been going on for some years in most advanced industrialised countries and on both sides of the Atlantic (see for instance, Snower (1999), Capelli (1997, 1999)). There is, however, relatively little systematical empirical evidence on how prevalent these new pay and work practices are, what differentiates firms that have adopted them from those who have not, and what implications they have for the functioning of labour markets. This is not only true for Denmark, but holds more generally. In fact a first attempt to provide a picture of the situation in the OECD area with respect to new work practices has only recently been published in the OECD's 1999 Employment Outlook (OECD, 1999).[1]

Looking at the literatures on "high involvement management", "high performance/ flexible workplace practices", "the organisational revolution" and "human resources management" , one can observe two broad positions. The first focuses on job design and argues that what matters is the way work is organised. Job design theorists point to the need of the enrichment of jobs, of more team-working, of increasing functional flexibility and/or involving workers (via quality

[1] Three recent studies of the diffusion of the new practices in US firms are Black and Lynch (2000), Freeman *et al.* (2000) and Osterman (2000). Curiously enough, there seem to be more investigations into the effects of these practices. Most of these are, however, based on unrepresentative samples; for exceptions, see Handel and Gittleman (1999), Black and Lynch (2000) and Neumark and Capelli (2000).

circles and TQM); see Gibbs and Levensohn (2001) for a discussion of these issues from an economic perspective. The new work practices are expected to give rise to higher productivity. Whether the productivity gains are shared with the employees, that is, lead to higher wages, is an empirical question, however.

The second position focuses on performance related pay – henceforth, PRP – and emphasizes the need to redesign monetary reward systems so as to create stronger incentives to ensure that workers behave for the benefit of the firm or the organisation.[2] PRP theorists remain rather sceptical about the virtues of re-engineering unless this is not accompanied by appropriate economic incentives.

The aim of this paper is twofold. First to give a picture of the use of the "new" pay and work organisation practices in Denmark and second, to attempt to understand how and why firms differ with respect to the adoption of different schemes. More specifically, the questions I address are:

1. How common are employers that have implemented "new" compensation and work organisation practices?
2. Are some patterns of adoption more common than others? Do practices cluster?
3. What characteristic of firms are associated with the adoption of these new compensation and work design practices?

[2] Examples of the scant evidence of the prevalence of performance related pay practices among firms are Brown (1990) for the United States, Drago and Heywood (1995) for Australia, and Burgess and Metcalfe (2000) for Britain. There are surprisingly few empirical studies of the effects of the introduction of PRP schemes; see Booth and Frank (1999) and Lazear (2000) for two notable exceptions.

4. Do firms with new pay practices also differ with respect to the implementation of human resources management practices, and in particular, to work organisation practices?

The adoption of performance pay and new work practices can be measured along several dimensions. It should be noted from the outset that I consider only one of them: whether a firm has adopted one of four PRP methods – team bonus, individual bonus, stock and stock options, and profit sharing – for four different categories of employees: top managers, middle-management, white collar workers, and blue collar workers. I do not attempt to rank practices according to some notion of their importance. One piece of information I do not have concerning the implementation of practices is the proportion of employees affected by the particular practices. Regarding new work practices the firms were asked whether they have adopted one of six work designs – teams[3], job rotation[4], quality circles (that is, employee problem-solving groups), total quality management, benchmarking and project organisation – for two groups of employees: hourly paid workers and salaried employees (including managerial employees).

The remainder of this paper is organised as follows. Next a brief description of the data set is provided. The two following sections contains the analyses of the use and adoption of new compensation and new work practices, respectively. Section 5 concludes.

[3] Organizing work in teams is defined as delegating the daily management of work to a group of employees. Important aspects of team working is pooling of skills and skills development of individual workers.

[4] Job rotation is a job design which allows workers to rotate between different jobs and tasks.

2. The data

The survey was administered by Statistics Denmark as a mail questionnaire survey in May and June 1999 which was sent out to 3,200 private sector firms with more than 20 employees. Thus, the survey over-sampled large and medium-sized firms. The response rate was 51 per cent, which is relatively high for a rather long and detailed questionnaire of the type that has been used here.

The survey represents a unique source of information on Danish firms' internal labour markets and changes therein. In addition to some background information about the firm, the firm[5] was asked about its work organisation, compensation, recruitment, internal training practices and how it evaluates its employees, as well as about eventual recent changes in these. For a brief description of the questionnaire and the main results (in Danish), see Eriksson *et.al*. (2000).[6]

As already noted the response rate to the survey was 51 per cent, providing me with 1,605 useful observations. For the questions regarding compensation practices within the firms, the firms were asked to distinguish between four different categories of employees: (i) managers, (ii) middle management, (iii) other white collar workers, and (iv) blue collar and other hourly paid workers. In connection with the questions concerning organisation of work the firms were asked to distinguish between hourly paid workers and salaried employees (including managers).

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[5] A notoriously difficult problem in surveying firms is to identify the right person in each firm who is best suited to answer the questions asked. We were fortunate in being able to use an address list constructed by Statistics Denmark, which included the relevant contact person in each firm. This is one important reason for why the response rate turned out to be quite high. Another contributing factor were the comments and advice given by Richard B. Larsen of Dansk Industri (Confederation of Danish Industries), which were helpful in designing the questionnaire.

[6] A copy of the questionnaire in English is available from the author upon request.

In what follows I shall be looking at four different forms of performance related pay practices: team bonuses, individual bonuses, stock and stock options, and profit sharing and six different work designs: teams, job rotation, quality circles, TQM, benchmarking and project organisation.

The survey data have been supplemented with additional information about the firms as well as about their workforces. This information is taken from a large employee-employer linked longitudinal data set which covers all private sector firms and all their employees during the period 1980-97.

3. The use of new compensation schemes

The theoretical literature on performance related pay basically consists of two types of models. One is principal-agency theory, which mainly focuses on optimal contracts in different situations, but which also provide some predictions as to why payment schemes may differ across firms. The second type of analysis looks at firms' choice between input- or output based pay (Lazear (1986), (2000)) and focuses on the role of monitoring and measurement costs. Theoretical work on group based payment schemes is rather scarce; Kandel and Lazear (1992) analyse incentives when work is organized in teams.

Let us to begin with look at *Table 1,* which gives some basic information about the incidence of performance related pay practices in the firms surveyed. We may note that in almost two thirds of the firms is there at least one worker category who receives PRP and that in 11 per cent of the firms are all four employee categories subject to some form of PRP scheme. Not surprisingly, PRP is most common among managers (in 48 per cent of the firms). As for the other categories

the differences across firms are fairly small. Thus, 35 per cent of the firms report using PRP for their middle management staff, whereas 29 per cent of the firms have adopted these practices for the white and blue collar workers.

Table 2 provides more detailed information about the frequency of the different PRP practices for the different worker categories. As a quick look at the data immediately reveals that the frequency of some practices vary with firm size, we also report – in brackets – the corresponding figures for firms with more than 350 employees.

Beginning with the top management of the firms, we can see that the most common forms of PRP among managers are individual bonuses followed by profit sharing schemes. Of all firms, 8 per cent, and 20 per cent of firms with more than 350 employees, have compensation contracts for their executives which include stock and/or stock options. The most common form of performance pay among middle managers and white collar workers is individual bonuses. As for the hourly paid workers, the single most implemented output-based pay scheme is team bonuses; they are used by 17 (31) per cent of the (350+) firms.

As can be seen from the table, the larger companies are more likely than the smaller firms to pay their employees, and their managers in particular, performance pay in form of individual bonuses or stock and stock options. The differences between firms of different size are less pronounced for the other forms of pay, save team bonuses which are considerably more prevalent in the larger firms. Finally, the bottom row of the table shows the proportions of firms which report they have implemented the payment form in question for at least one category of employees. Here we may notice that individual and team bonus schemes are clearly the most adopted ones, whereas profit

sharing and stock and stock options are relatively rare.

Next we turn to look at some estimation results from logit models for whether firms make use of performance related pay systems for the employees and for different sub-categories thereof. We begin with a generous definition of a PRP using firm as one which has adopted at least one of the following methods of payment: team bonuses, individual bonuses, profit sharing and stock/stock options. As the data come from a survey directed at firms, the explanatory variables predominantly refer to the firm. Thus, the question addressed is: what differentiates firms which have implemented PRP practices from those which have not? A set of results are displayed in *Table 3.* The estimations shown in the table are the outcomes of a procedure where I have also experimented with a host of other explanatory variables, and have discarded those which were totally insignificant.[7]

The first column presents the estimates for *all* employees, that is, I do not take into account which specific group of workers is subject to PRP. Thus, in order for the dependent variable to be equal to one, it suffices that the firm uses one method for one group only. There are four things worth noting here. *First*, the probability of having adopted a PRP scheme increases with firm size. This is in contrast to previous studies, like Brown (1990), which have used establishment level data for the US manufacturing sector, and have found a negative relationship. This has been explained either by smaller firms having fewer hierarchical levels and hence less promotion incentives or by the costs advantages of larger firms with respect to supervision,

[7] One example of regressors omitted from the preferred specification is age of firm. Without controlling for industry, younger firms (established after 1980) are found to be more likely to have PRP schemes.

standardisation of work organisations, and spreading the fixed monitoring costs on a larger workforce. Entering explanatory variables measuring the number of hierarchical levels does not change the results at all.

Second, the probability that employees in foreign owned firms (as well as in companies which own subsidiary firms outside Denmark) receive some part of their pay based on performance is higher than for Danish owned firms. This finding can be interpreted in two ways. Firstly, the result can be explained by the higher monitoring costs foreign owned firms face because of the geographical or cultural distance. As it is difficult for owners of foreign owned firms to supervise management, performance related pay schemes are adopted. Secondly, the higher prevalence of PRP in foreign firms may be due to these firms introducing the same pay practices in all their subsidiaries, irrespective of location. As we will see later, foreign ownership is also of some importance in explaining the use of new work practices. This suggests that the monitoring costs cannot be the sole explanation, since work practices adoption should not be related to supervision costs.

Third, firms headed by a CEO who has been employed after 1995 have, everything else equal, a higher probability of having adopted some form of PRP scheme. *Fourth*, firms which report they mainly use internal recruitment and promotions in employing workers have a higher PRP probability. This is somewhat unexpected as it has been suggested in the literature (Baker (1990), Gibbs (1995)) that internal labour markets and incentive pay systems are likely to be substitutes; firms which cannot offer career and promotion opportunities have to introduce other incentives to motivate their employees to put forth effort, whereas firms which can provide these internal labour market opportunities do not have to. On the other hand, the dummy for the CEO being

promoted from within the firm, which can also be considered as a measure of the importance of internal labour markets in the firm, attaches a statistically significant coefficient carrying the expected negative sign for the adoption of individual bonus systems. Finally, the composition of the workforce turns not out to be important for the adoption of PRP practices.

This pattern of results which is obtained for all employees as a group remains largely intact as I distinguish between the four different PRP schemes. The only exception is profit sharing which is unrelated to all the independent variables in Table 3. In particular, firm size and foreign ownership are common explanatory variables of considerable importance in all four logit estimations in columns (2) to (5). It is also worth noting that firms' use of team and individual bonuses in the main appears to be determined by the same factors.

What is insignificant is as interesting as is what is. Three variables which turned insignificant in all but two cases were: a dummy for local wage agreement which is a measure of the presence and influence of trade unions, the proportion of managerial employees which is a measure of monitoring costs to the firm, and the proportion of female employees in the firm. The latter is included to test for the hypothesis suggested by Goldin (1986) according to which firms with a high female workforce share and thus, higher labour turnover, are less likely to invest in building internal labour markets and use incentive schemes instead. Whether unions facilitate or makes introduction of new pay practices more difficult is an interesting question which has received some attention in the literature. The estimation results indicate that in general, the presence of unions do not matter, except for the implementation of stock and stock options as a compensation method. This is much less prevalent in firms with a local wage agreement. Stock and stock option contracts are more common in firms with a higher female workforce share.

Moreover, the pattern is also replicated when we distinguish between the four different groups of employees; see *Table 4.* As for managers, two new features are that managers in firms (i) with a CEO that has been promoted from within the firm are less likely to be subject to PRP, and (ii) which have higher than average training costs per employee are more likely to have a PRP element in their manager's compensation scheme are less likely to use performance pay for their managers. The first observation indicates that firms with a tournament type promotion policy rely to a lesser extent on other incentive schemes.[8] High training costs are in all likelihood positively correlated with the skill level in the firm and may capture the sorting effect of providing PRP schemes to employees, stressed by *e.g.* Lazear (2000).

In the main whether middle managers are paid according to PRP schemes or not is determined by the same factors as that of top management. For salaried workers the only new feature observed is that a higher share of blue collar workers in the firm's workforce is associated with a lower probability that the firm uses PRP to provide incentives to its non-managerial white collar workers.

The group which stands out as different with respect to the determinants of being paid PRP is the hourly paid workers. The first thing to note is that the explanatory power of the logit model is higher than for other groups. Foreign owned firms are also more likely to pay their blue collar workers performance pay as Danish owned companies but the quantitatively (in terms of the marginal effect) the effect is considerably smaller than for other categories of employees. Firm

[8] Accounting for the fact that whether the CEO is recruited from within or outside the firm may depend on earlier firm performance yields yet another interpretation. If internal mechanisms have failed, the firm may have appointed an outside CEO as well as introduced incentive schemes to shake things up.

size has a quantitatively smaller effect than for managerial employees. Being subject to foreign competition and having a low share of white collar workers both increase the likelihood that the firm's hourly paid workers on top of their hourly wages receive some form of output based compensation. The positive coefficient attached to the foreign competition dummy can be interpreted in two different ways. One is that firms which are exposed to foreign competition are also exposed to new ideas and innovations, including those in the area of compensation and human resources management policy. Another interpretation is that adoption of new practices enables them to compete internationally. The local wage agreement dummy is an indicator of the presence and importance of unions in the firm. It attaches a positive but insignificant coefficient.

Since the logit estimates as such are not very informative concerning the magnitude of the effect of a right hand side variable on the PRP probability, I have computed the marginal effects as evaluated at the means of the independent variables and also carried out some computations using a reference case on which we superimpose a number of changes in the explanatory variables one at a time. Briefly summarising the results I find that the single most important explanatory variable is foreign ownership and other quantitatively important factors are: main competition coming from abroad (rather than from domestic firms) and internal recruitment policy. The differences in relative importance of the explanatory variables are smaller for the hourly paid workers.

4. New work practices

I next turn to examine the prevalence of new forms of organising work in Danish firms. Let us start by looking at *Table* 5. The first two columns show the proportion of firms which use the six

different work designs asked about in the questionnaire[9] for salaried and hourly paid employees, separately. The three remaining columns gives information as to when the firms were reorganising work; in recent years, in the first half of the nineties or earlier.

A first thing we may notice is that the most used of the new work organisations are self-managing teams – for both salaried and hourly paid workers – and project organisation for salaried employees. These have been adopted by about a fourth of the firms. Job rotation is another relatively frequently used design, especially for the hourly paid.[10]

As can be seen from the table, 30-40 per cent of the firms that have adopted the new work practices have done so during the previous three years, and a third earlier in the nineties. Two practices have a slightly different adoption pattern: benchmarking, which very few firms have implemented (and only recently) and total quality management (TQM), which was introduced in the early nineties and the incidence of which is relatively low. I also examined whether there are differences between foreign and domestic owned firms as to when they have introduced the NWPs. One possibility is that foreign owned firms adopt the practices earlier and the Danish firms imitate them. As can be seen from the table, there are no signs of clear differences. Rather, it seems as the diffusion of new practices have occurred at roughly the same pace in foreign and domestic owned firms.

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[9] The questionnaire contained an open alternative. Rather few firms used this option, however, and there is no additional work practice which is implemented by more than 1 per cent of the sample firms.

[10] The picture emerging from this study resembles that shown for Denmark in OECD (1999), but differs considerably from that of the only previous Danish survey on work organisation, DISKO (1997).

Table 6 shows the incidence of new work practices for a number of firm characteristics. Here, a firm is defined to have adopted a new work practice if it uses at least one of them for either the salaried or the hourly paid part of its workforce. I have also computed the incidence for another definition requiring that the firm has adopted at least one practice for both its salaried and hourly paid workers. The pattern obtained by using this more narrow definition is essentially the same; the only difference is that the incidence levels are considerably lower.

We may note that there are large differences across industries. The odds of having implemented at least one new work practice are higher in manufacturing and the financial sector. The construction and utilities industries have been slow in introducing new practices. Thus may reflect the fact that these two industries are rather sheltered from competition. Foreign owned firms are more likely than domestically owned companies to have adopted a new work organisation design. Incidence rates are increasing in firm size and are very similar across firms of different age. The prevalence of new work practices differ between firms with different workforce compositions. Thus, firms with a high proportion of older workers, a low share of female employees and a low share of employees with university degree or equivalent, are less likely to have adopted these practices.

The second half of table contains incidence rates for firms which have and have not adopted or changed its compensation policy, respectively. It can be seen that firms which report to have had implemented significant reforms of their management structure during the last five years are more likely to have adopted new work practices. Likewise, firms which have introduced new pay structures or have made use of external consultancy services to evaluate or change work practices during the same period also have higher NWP incidence. Furthermore, firms which use

performance pay schemes for their employees are also more likely to have adopted some of the new work practices than those firms which do not make use of PRP. Thus, *Table 6* tells us that firms which have adopted the new pay practices have to a higher extent than other firms also adopted new work practices. This is consistent with the frequently expressed view that there may be complementarities between incentive compensation schemes and the new flexible work practices; see Milgrom and Roberts (1990), Huselid (1995) and Ichniowski *et al.* (1995).

In order to obtain some further information about what differentiates firms that have implemented new work practices from those which have not, I have estimated logit models for the adoption of each of the six work practices separately for the hourly paid and the salaried workers. The estimation results are set out in *Tables 7* and *8*.

A first observation worth making is that firm size does influence the adoption of NWP's for both hourly paid workers and for salaried employees. There are two arguments for why size may matter; see Osterman (1994) for a discussion. One is that reorganising work is associated with fixed costs yielding economies of scale in larger firms, and so, implementation of new practices is predicted to increase in firm size. Another is that larger firms are more bureaucratic and hence less flexible, indicating that they are less likely to engage in reorganising work. The latter hypothesis is not supported by the data.

In addition to firm size, dummies for the number of hierarchical levels (as reported by the firms in the questionnaire) in the company were entered as explanatory variables. The hypothesis is that less hierarchical firms have less need for improving communication and cooperation between employees. This is not confirmed for most of the work practices. As a matter of fact, firms with

a relatively large number of levels in the hierarchy tend to have a lower, albeit insignificant, probability of adopting the practice in question.

Foreign ownership, which was instrumental in explaining adoption of new pay practices, proved also to be of some importance in differentiating between adopters and non-adopters of alternative, flexible work organisations. Foreign owned firms are much more likely to have introduced benchmarking and project organisation schemes for both their salaried and hourly paid workers and TQM for the salaried employees than the domestically owned companies.

It seems plausible to assume that the new, more flexible work practices often are implemented in connection with introduction of new technologies. In fact, much of literature argues that changes in technology (in particular, computers and micro-electronics) have lead to larger variability in tasks and thus explain why employers are much more interested in introducing more flexible work organisations than before. Unfortunately, the data set does not contain information about technology used nor about changes therein.[11]

Given that introduction of new technology requires a more skilled labour force and/or investments in skills, it is of some interest to examine how workforce composition is related to the work practices adopted by the firms. Another reason is that since the new practices imply greater variety and delegation of tasks, the NWPs themselves are likely to be complementary to skills. In order to see if this pattern can be found in the data, a set of variables capturing the

[11] One possibility is that newer firms are more likely to have new technologies. In Table 5 above, we saw, however, that the incidence of NWP adoption did not differ between firms of different age. A closer inspection, distinguishing between firms established in the nineties and the eighties, did not alter this picture.

gender, age and education structure of each company's workforce were entered as explanatory variables into the logit model.

I find that firms with a high proportion of younger workers (below the age of 30) seem to be more likely to have introduced new work organisations, but the estimates do not differ significantly from zero. A higher prevalence of NWPs in firms with more educated labour is consistent with the view that the new practices are complementary to skills. This is borne out the estimates for the salaried workers. Moreover, adoption of these practices is in all likelihood associated with increased training within the firm and so, this is something one expect to see less of in firms with relatively old workforce. Companies with a larger faction of females in the workforce are less likely to have organised work in project organisations, whereas they are more apt to use job rotations schemes for their salaried employees.

The earlier, chiefly case-based literature has discussed the role of unions in transforming work organisations. The presence of unions can work both ways. In some cases unions fear flexibility will undermine their influence and hence oppose introduction of new practices. In other cases unions have been said to have facilitated and mobilised support for introduction of new technology and new work organisation. In the questionnaire the firm is asked whether it is a member of the Employers' Federation and whether it has signed a local wage agreement (*overenskomstaftale*) with the trade unions. I have used this information to construct two dummy variables which are included in the logit models. Some of them attach positive and significant coefficients. Thus, in contrast to the new compensation practices, labour market organisations seem to play a positive role facilitating change.

Firms which claim that they are paying higher wages to their employees than other employers in the same local labour market are according to the estimates more likely to have adopted the NWP's. This is especially true for salaried employees. From this one should not, of course, draw the conclusion that the new work practices lead to higher pay, for instance due to employers sharing the productivity gains with their employees. Still, it is worth noting that this result is obtained when controlling for workforce characteristics.[12]

So far I have only looked at whether the firms adopt at least one of the work practices or not, and at firms' use of the individual practices. Of course, this neglects that firms may be implementing different numbers and combinations of practices. In fact, some studies of the effects of innovative work practices have shown that they have positive effects on productivity predominantly when firms use several practices in combination; see Ichniowski et al. (1996). The fact that new practices work only when they are bundled together suggests that they are complementary, that is, the return to one practice is increased by the use of another.[13] As can be seen from *Table 9*, many of those companies which have adopted one of the new work practices have indeed implemented more than just one.

In order to see whether the number of practices used were related to some of the same factors as the implementation of the individual practices, the number of practices adopted for managerial and salaried employees and hourly paid workers separately were computed for each firm. This

[12] This is not often controlled in the studies of the impact of NWP's. Moreover, the existing evidence is largely cross-sectional. The analysis of the consequences of NWP is on my research agenda.

[13] See Milgrom and Roberts (1990) for a theoretical analysis.

simple measure of the extent to which the firms have introduced new work practices[14] was next analysed by means of an ordered logit analysis.

Estimation results are given in *Table 10.*[15] What do I find? First, firm size has a positive but quantitatively not very important effect. Second, not surprisingly in view of the previous results regarding individual practices, foreign owned firms are more apt to have adopted several of the new work practices for both their salaried and hourly paid employees. Third, the adoption of new work practices are more likely to occur simultaneously with, or as a consequence of, the implementation of other measures taken within the firm to do things differently than before. Thus, the use of consultancy help in recent years increases the probability that a firm has adopted several practices. Likewise, a recently employed chief executive officer increases the likelihood that the firms implements several new work practices. This is reinforced if the CEO is employed from outside the firm, which is more likely to happen if, because of poor performance of the removed CEO, it is considered necessary to shake things up.

[14] The questionnaire does not ask firms about how big a proportion of their workforces are covered by the work practices. As this is likely to be correlated number of practices adopted, the results shown below give an indication of whether the neglect of the coverage has significant effects the conclusions.

[15] In interpreting the estimation results, it should be noted that the marginal effects are not equal to the coefficients, nor is the sign of the effect of regressors unambiguously the same as that of the coefficient, save the highest and lowest outcome probabilities; see Greene (1993), pp. 672-674 for a discussion

5. Summary and concluding comments

In this paper I have used a unique data set providing information on firms and their employees in order to document the extent to which Danish firms have adopted new, performance related pay and new work practices and to carry out some statistical analysis to identify their correlates. The analysis concerns four different pay practices and five work practices. The findings regarding the incidence of the new pay and work practices and changes over time therein, suggest that there still are quite many firms which have not adopted many (or even any) of the new practices, but that the proportion of firms implementing them is indeed increasing.

The findings strongly suggest that a number of variables are positively associated with the adoption of performance pay practices. Thus, foreign owned firms, larger firms, and companies with a relatively recently appointed CEO (recruited from outside the firm) are more apt have made use of performance pay schemes. These are common determinants of the likelihood of individual practices as well and point to the role of monitoring difficulties as suggested by the personnel economics literature and to the importance of scale economies in practice adoption.

As for differences in the incidence of new work practices I find that foreign owned firms and larger companies are more likely to have implemented the individual practices as well as several of them. The presence of unions and firms being organised in the employers' federation both appear to be facilitating the introduction of new more flexible practices. For salaried workers, there is some evidence that the new work practices are complementary to workforce skills.

Clearly, an interesting question concerning the introduction of new pay and work practices is their consequences for the firms and their employees. This is on my agenda for future research.

Table 1. Some sample characteristics

Firms with:	per cent:
at least one category subject to PRP	63.7
PRP in all worker categories	11.3
PRP for top, middle managers and salaried workers	21.7
PRP for top and middle management only	30.8
PRP	
for top managers	48.2
for middle managers	35.0
for salaried workers	29.0
for the hourly paid	28.6

*Table 2. Performance pay methods by category of employees (numbers in parentheses refer to 350+ firms)**

Employee category:	**Team bonus**	**Individual bonus**	**Stock, stock options**	**Profit sharing**
Top managers	7 (9)	31 (53)	8 (20)	14 (12)
Middle managers	8 (8)	20 (36)	4 (13)	9 (10)
Salaried workers	10 (12)	14 (18)	4 (11)	8 (10)
Hourly paid workers	17 (31)	8 (9)	2 (8)	6 84)
All	29	42	8	16

* For stock/stock options, it does not necessarily make sense to look at the share of all firms. Rather, the natural “population at risk” is listed firms (options) or stock companies.

Table 3. Logit estimates of firms' use of different PRP schemes [a]

	At least one PRP scheme	**Team bonus**	**Individual bonus**	**Stock, stock options**	**Profit sharing**
Foreign owned firm	1.157*** (0.193)	0.847*** (0.157)	0.969*** (0.155)	0.645*** (0.243)	-0.255 (0.210)
Operations abroad	0.307* (0.171)	0.276* (0.159)	0.368** (0.152)	0.715*** (0.235)	-0.008 (0.198)
Ln (employees)	0.360*** (0.088)	0.265*** (0.077)	0.208*** (0.074)	0.575*** (0.109)	0.007 (0.094)
CEO: hired 1995 or later	0.256* (0.157)	0.195 (0.149)	0.268* (0.142)	0.406* (0.237)	-0.018 (0.185)
CEO promoted from within	-0.134 (0.141)	-0.147 (0.141)	-0.319** (0.131)	-0.218 (0.230)	0.175 (0.173)
Internal recruitment policy	0.446** (0.191)	0.958*** (0.259)	0.233 (0.192)	0.174 (0.386)	0.190 (0.252)
Proportion managerial employees	-0.877 (1.193)	-0.089 (1.291)	-0.021 (1.160)	1.587 (2.073)	0.347 (1.4461)
Proportion female empl.	-0.220 (0.361)	0.112 (0.374)	0.060 (0.346)	1.105* (0.588)	-0.554 (0.456)
Local wage agreement	0.117 (0.161)	0.125 (0.172)	0.024 (0.155)	-0.981*** (0.277)	-0.080 (0.197)
Industry dum-mies	yes	yes	yes	yes	yes
Pseudo R^2 N. of obs.	0.088 1,185	0.083 1,185	0.076 1,185	0.153 1,185	0.012 1,185

[a] *A firm is defined to use a scheme if it has adopted it for at least one category of employees. Standard errors in parentheses. ***, ** and * denote 1, 5 and 10 per cent levels of significance.*

Table 4. Logit estimates of firms' use of PRP schemes for different groups of employees

	Top managers	**Middle management**	**Salaried employees**	**Hourly paid workers**
Foreign owned firm	1.083*** (0.162)	0.689*** (0.150)	0.619*** (0.156)	0.475*** (0.165)
Operations abroad	0.365** (0.155)		0.221 (0.157)	
Ln(employees)	0.265*** (0.074)	0.376*** (0.065)	0.266*** (0.070)	0.322*** (0.068)
CEO: hired 1995 or later	0.260* (0.145)	0.140 (0.143)	0.254* (0.149)	
CEO promoted from within	-0.423*** (0.133)	-0.033 (0.133)	-0.113 (0.140)	0.046 (0.143)
Internal recruit-ment policy	0.175 (0.190)	-0.331** (0.154)		
Local wage agreement	-0.222 (0.155)		-0.249 (0.168)	0.193 (0.183)
Higher than av. training costs	0.333** (0.156)			
Foreign com-petition				0.394** (0.162)
Blue collar worker share			-1.017*** (0.316)	2.407*** (0.354)
Proportion female empl.			-0.164 (0.375)	-0.052 (0.383)
Industry dummies	yes	yes	yes	yes
Pseudo R^2	0.094	0.063	0.063	0.119
N of obs.	1,185	1,196	1,185	1,196

Table 5. Incidence of new work practices and the timing of their introduction in the firm (%)

Work practice:	**Salaried employees**	**Hourly paid workers**	**1996-99**	**1990-95**	**Before 1990**
Teams					
all	26.5	21.8	41.6	31.3	27.1
foreign			14.1	31.8	54.1
domestic			31.0	31.0	38.0
Job rotation	6.2	17.4	37.9	39.9	22.2
all			19.3	42.1	38.6
foreign			23.5	39.3	37.2
domestic					
Quality circles	3.7	3.4	37.0	39.1	23.9
all			0	60.0	40.0
foreign			30.6	33.3	36.1
domestic					
TQM	8.3	4.1	38.9	51.1	10.0
all			9.4	59.4	31.2
foreign			10.5	45.6	43.9
domestic					
Bench-marking	7.9	1.6	57.6	34.8	7.6
all			5.3	34.2	60.5
foreign			10.7	35.7	53.6
domestic					
Project or-ganisation	24.5	5.7	35.8	37.7	26.5
all			21.6	40.6	37.8
foreign			29.0	36.5	34.5
domestic					

Source: Firm questionnaire; 1,605 firms

Table 6. Incidence of new work practices by firm characteristics (%)

Industry:		**Size** (number of employees):	
Manufacturing	64.9	-49	42.8
Utilities	45.3	50-99	57.0
Construction	49.5	100-199	68.2
Trade	36.9	200-349	73.1
Financial services	74.6	350-999	77.9
Other services	50.0	1000+	76.3
All	57.2		
		Proportion of workforce below 29 years of **age**:	
Ownership:			
Domestic	54.4	0-20 per cent	61.6
Foreign	66.7	21 - 40 per cent	58.7
		41 per cent or more	53.5
Age of firm:			
1. establ. before 1944	56.7	Proportion **females** in workforce:	
2. establ. 1945-67	58.7	0-20 per cent	52.2
3. establ. 1968-80	57.7	21 - 40 per cent	59.8
4. establ. 1981-	57.3	41 per cent or more	62.0
		Proportion with at least 15 years of **schooling** in workforce:	
		0-20 per cent	55.6
		21 - 40 per cent	64.0
		41 per cent or more	75.4

The firm has in recent (five) years:		**The firms pays**:	
Implemented new management structure		PRP for at least one group of employees:	
Yes	70.9	Yes	67.6
No	47.1	No	55.9
Introduced new pay structure		Higher wages than their competitors:	
Yes	68.5	Yes	64.4
No	50.3	No	57.4
Used external consultancy services:			
Yes	69.4		
No	48.4		

Table 7. Logit estimates of firms' adoption of different work practices for their hourly paid workers

	Teams	**Job rotation**	**TQM**	**Benchmarking**	**Project organisation**
Foreign owned	0.308*	0.409**	0.496	1.215**	0.527*
	(0.187)	(0.208)	(0.348)	(0.480)	(0.290)
Ln (employees)	0.151**	0.394***	0.304**	0.726***	0.496***
	(0.075)	(0.085)	(0.140)	(0.193)	(0.111)
Wage higher than in:					
local labour market	0.323	0.270	0.214	0.757	0.873**
	(0.244)	(0.275)	(0.492)	(0.697)	(0.366)
same industry	-0.333	-0.243	0.106	-0.398	-0.081
	(0.268)	(0.298)	(0.520)	(0.770)	(0.400)
Employers' fed. member	0.384*	0.284	0.865*	-0.076	0.509
	(0.205)	(0.230)	(0.509)	(0.671)	(0.393)
Local wage agreement	0.303	0.246	0.980*	1.243**	0.170
	(0.213)	(0.258)	(0.529)	(0.575)	(0.362)
Proportion:					
with higher education	-1.610	-4.530***	1.510	-1.542	0.895
	(1.066)	(1.428)	(1.751)	(3.051)	(1.466)
aged 29 or more	-0.632	-0.029	-0.594	1.789	-0.561
	(0.518)	(0.622)	(1.056)	(1.947)	(0.873)
female workers	-0.170	1.885***	-0.448	-0.843	-2.474***
	(0.414)	(0.440)	(0.877)	(1.404)	(0.884)
Industry dummies	yes	yes	yes	yes	yes
Pseudo R^2	0.045	0.158	0.072	0.147	0.109
N of obs	1,050	1,056	991	752	1,050

Table 8. Logit estimates of firms' adoption of different work practices for their salaried employees

	Teams	**Job rotation**	**TQM**	**Benchmarking**	**Project organisation**
Foreign owned	-0.085 (0.176)	0.491* (0.288)	0.840*** (0.240)	1.487*** (0.249)	0.684*** (0.176)
Ln (employees)	0.108 (0.071)	0.469*** (0.111)	0.276*** (0.104)	0.627*** (0.107)	0.545*** (0.076)
Hierarchy:					
3-5 levels	0.121 (0.172)	0.303 (0.373)	0.104 (0.282)	-0.119 (0.314)	0.162 (0.197)
6+ levels	-0.224 (0.191)	0.336 (0.389)	-0.059 (0.305)	-0.272 (0.341)	0.261 (0.208)
Wage higher than in:					
local labour market	0.414* (0.217)	0.428 (0.391)	0.586* (0.320)	0.994*** (0.342)	0.016 (0.241)
same industry	0.020 (0.237)	-0.206 (0.452)	0.040 (0.355)	-0.031 (0.382)	0.278 (0.261)
Employers' fed. member	-0.334** (0.166)	-0.047 (0.305)	0.040 (0.262)	0.294 (0.297)	0.028 (0.191)
Local wage agreement	0.342** (0.146)	0.459* (0.276)	-0.025 (0.234)	-0.543** (0.276)	-0.048 (0.161)
Proportion:					
with higher education	0.205 (0.702)	2.517*** (0.976)	2.517*** (0.927)	1.335 (0.976)	2.887*** (0.752)
aged 29 or more	-0.343 (0.458)	-0.564 (0.798)	-0.034 (0.720)	1.030 (0.826)	0.562 (0.526)
female workers	0.081 (0.379)	0.924 (0.705)	-0.650 (0.638)	0.320 (0.674)	-0.874** (0.446)
Industry dummies	yes	yes	yes	yes	yes
Pseudo R^2	0.033	0.120	0.075	0.185	0,120
N of obs	1,129	1,123	1,123	1,123	1,123

Table 9. Prevalence of new work practices (per cent of firms)

Number of new work practices	Hourly paid workers	Managerial and salaried employees
None	70.8	53.0
1	6.2	27.8
2	17.8	12.0
3	4.2	4.5
4	0.6	1.7
5 or 6	0.3	1.0

Table 10. Ordered logit estimates of the number of NWP's adopted

Independent variable:	Coefficient	Standard error
Firm size (number of employees in thousands)	0.320***	0.001
Foreign owned firm	0.575***	0.130
Used consultancy help in recent years	0.659***	0.110
CEO employed after 1996	0.428*	0.251
CEO employed from within firm	-0.360***	0.114
R^2	0.029	
Number of obs.	1,140	

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